Navy Public Works Center
Detachment Philadelphia

STANDARD OPERATING PROCEDURE

Abrasive Wheel Testing

PROCEDURE NUMBER 500.44

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Standard Operating Procedure
Abrasive Wheel Testing
SOP # 500.44

Purpose: To establish policy on testing procedures for abrasive wheels.

PPE: Safety Glasses, Goggles, Face Shield, Protective Clothing, and Respirator

References: CFR 29 1910
CFR 29 1926

Procedure:
1. Select the right wheel for the job. It is important for safety. A wheel is dangerous when used for work in which it was not designed. Manufacturers provide technical information on wheel selection and proper use.
2. Use only wheels marked with the type of wheel and maximum speed in revolutions per minute(rpm)
3. Inspect the wheel upon receipt from tool room
4. Examine the wheel for any signs of damage.
5. Use "ring test" to check wheels. Rings tests do not apply to wheels 10cm 4" diameter and smaller.

Safety Hazards:
1. A wheel that shatters can seriously injure the operator and those working nearby.
2. Shooting fragments of a wheel can injure the eyes and face.
3. Contact with the wheel can cause cuts and scrapes.
4. If a portable grinder is dropped, it can injure the legs and feet
5. Sparks can cause burns.

Health Hazards:
1. Breathing in dusts can cause respiratory problems.
2. Contact with lubricating oils and metallic dusts can irritate the skin.
3. Noise can damage hearing and be stressful.
4. Electric shock can kill.

Storage and Handling:
1. Check all wheels when they are received and before using them.
2. Follow the manufacturer's instruction for storage.
3. Store grinding wheels in an area that is dry and protected against damage from impact, solvents, high humidity, and extreme heat or cold.
4. Store portable grinders on hooks, V-shaped racks or hard plastic cases.
5. Never roll a wheel on its edge; it may absorb oil or dirt from the floor, and get damaged.

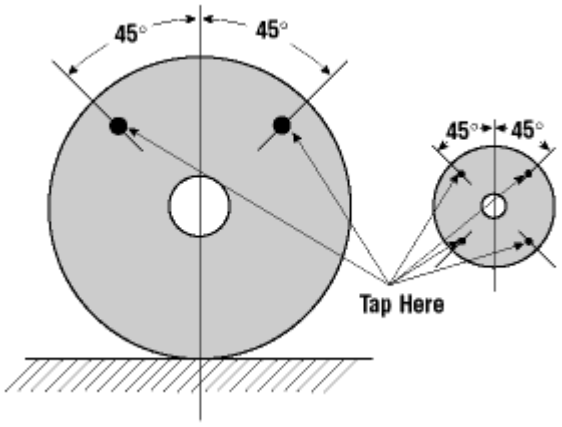
Testing:
Cracks in abrasive wheels are often impossible to see. An effective method to detect cracks is the ring test. Always test your wheel immediately before mounting it. Make sure the wheel is dry and clean before you begin the test.

The Ring Test:
The ring test assesses the sound coming from a grinding wheel when it is lightly tapped. An undamaged wheel sends out a clear ringing tone.
Use the ring test on vitrified bonded wheels. **Do not use it on:**

- Wheels that have a diameter of 10 centimeters(4 inches) or less;
- Plugs and cones
- Mounted wheels

Performance of Ring Test

1. Suspend the wheel from the hole on a small pin or finger. If wheel is too heavy, rest it on its outer edge on a clean, hard floor.
2. Tap the wheel gently with a non-metallic tool. For light wheels, use the handle of a screwdriver. For large or heavy wheels use a wooden mallet. Use the diagram below for testing areas.
3. Listen for the sound that comes from the wheel when it tapped Turn the wheel 45 degrees to right or left, and repeat test.
4. Compare the sounds from the wheel being tested with those from other wheels of the same lot and type.
5. Set aside any wheel that has a suspiciously different ring for further testing. If you need help, call the manufacturer.



- **NOTE: The ring test cannot absolutely guarantee the condition of the wheel. For this reason, all persons must stand clear when a grinding wheel is started. A defective wheel is most likely to shatter at the start-up.**